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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,532	01/23/2004	Ayumu Fujita	Q79448	5352

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EXAMINER

OH, TAYLOR V

ART UNIT	PAPER NUMBER
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1625

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

304.

Office Action Summary**Application No.**

10/762,532

Applicant(s)

FUJITA ET AL.

Examiner

Taylor Victor Oh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/23/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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The Status of Claims:

Claims 1-14 are pending.

Claims 1-14 have been rejected.

DETAILED ACTION

1. Claims 1-14 are under consideration in this Office Action.

Priority

2. It is noted that this application is a division of 09/958,096 filed on 10/5/01, which is a 371 of PCT/JP01/07708 filed on 09/5/01, which claims benefit of 60/238,436(10/10/2000). Acknowledgment is made of applicants' claim for foreign priority under 35 U.S.C. 119 (a)-(d). The copy of JP 2000-271415 has not been filed in the application.

Drawings

3. None.

Claim Rejections - 35 USC § 112

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 7, 11-12, and 13-14 rejected under 35 U.S.C. 102(b) as being anticipated clearly by Izumi (JP- 57130954 A).

Izumi discloses a process of producing ethyl ester of acetic acid by reacting 2.5 moles of ethanol and 1 mole of acetic acid in the presence of an aqueous solution of heteropolyacid on active carbon (see page 405, left col., example, 1), which may suppress the occurrence of an ether as one of the by-products; the catalyst is selected from the group consisting of 12-molybdophosphoric acid, 12-tungstosilicic acid, $H_3PW_{12}O_{40}$, and $Na H_3Si PW_{12}O_{40}$ (page 406, Table); the supported amount of the heteropolyacid is from 5 to 20 Wt % (see, abstract page). This is identical with the claims.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

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35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Izumi (JP- 57130954 A) in view of Kashnitz et al (U.S. 5,518,699).

Izumi discloses a process of producing ethyl ester of acetic acid by reacting 2.5 moles of ethanol and 1 mole of acetic acid in the presence of an aqueous solution of heteropolyacid on active carbon (see page 405, left col., example, 1), which may suppress the occurrence of an ether as one of the by-products; the catalyst is selected from the group consisting of 12-molybdophosphoricacid, 12-tungstosilicic acid, $H_3PW_{12}O_{40}$, and $Na H_3Si PW_{12}O_{40}$ (page 406, Table) ; the supported amount of the heteropolyacid is from 5 to 20 Wt % (see , abstract page).

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However, the instant invention differs from the prior art in that the inorganic support is at least silica gel comprising SiO_2 in an amount of 90 % by mass or alumina; the conversion of the lower alcohol is 70 % by mass; and the ratio of the lower alcohol to the lower carboxylic acid is in the range of from 1:10 to 1:1.

Kashnitz et al teaches a process for carrying out chemical reactions in a reaction distillation column, such as the preparation of the methyl, ethyl and butyl esters of formic, acetic acid, propionic and butyric acids (see col. 4, lines 52-56) in the presence of an inorganic catalyst (see col. 2, lines 60-65) containing SiO_2 , clays, heteropolyacids (see col. 3, lines 19-23) and etc. Furthermore, the reaction distillation column allows the use of catalysts which are stable at high temperatures and the easy removal of inactivated catalyst (see col. 2, lines 15-16).

Concerning silica gel comprising SiO_2 in an amount of 90 % by mass, Kashnitz et al does teach that the inorganic catalyst containing SiO_2 may be employed for the ester synthesis depending on the skilled artisan's intent although there is no description of using the gel type of silica. Furthermore, there is little difference between the gel type of silica and the regular silica with respect to their corresponding use in the process in the absence of an unexpected result. Moreover, the amount of SiO_2 present in silica gel does not impart patentability to a process when such a value is that which would be determined by one of

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ordinary skill in the art in achieving optimum operation of the process.

Concentration is well understood by those of ordinary skill in the art to be a result-effective variable, especially when attempting to control selectivity in a chemical process.

With respect to the claimed ratio of the lower alcohol to the lower carboxylic acid having 1:10 to 1:1, Izumi expressly discloses 2.5 moles of ethanol and 1 mole of acetic acid in the process of producing ethyl ester of acetic acid. The claimed ranges and the prior art, regarding the molar ratio between ethanol and acetic acid, do not overlap but are close enough that one skilled in the art would have expected them to have the same properties in the absence of unexpected results.

Regarding the 70 % conversion of the lower alcohol, the Izumi indirectly teaches the % of the acid conversion which is in the range of from 65 to 100 % in the table (page 406, Table). The % of the acid conversion is directly proportion to the % conversion of the lower alcohol since the carboxylic acid is the limiting agent. Therefore, the prior art does teach the % conversion of the lower alcohol.

Izumi does teach the process of producing ethyl ester of acetic acid by reacting ethanol and acetic acid in the presence of an aqueous solution of heteropolyacid. Similarly, Kashnitz et al also teaches the process for preparing,

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ethyl ester of acetic acid (see col. 4 ,lines 52-56) in the presence of an inorganic catalyst (see col. 2 ,lines 60-65) containing SiO_2 , clays, heteropolyacids (see col. 3 ,lines 19-23) which are stable at high temperatures. Both prior art processes have been ethyl ester of acetic acid by reacting ethanol and acetic acid in the presence of the heteropolyacid. Kashnitz et al has offered the guidance that the heat stable inorganic catalyst (see col. 2 ,lines 60-65) containing SiO_2 , clays, heteropolyacids can be advantageous during the process.

Therefore, it would have been obvious to the skilled artisan in the art to be motivated to incorporate Kashnitz's et al inorganic catalyst (see col. 2 ,lines 60-65) containing SiO_2 into the Izumi process because the skilled artisan in the art would expect the overall heat stability of the Izumi inorganic catalyst to be enhanced as shown in the Kashnitz et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cecilia Tsang can be reached on 571-272-0562. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

✓
8/29/24

Chieh Tsang
Tsang